



Advanced Light Combat Vehicle Armament (ALACV)

Air Bursting Munition

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12 April 2001



Briefing Agenda

- Objectives
- Demonstration Vehicle Constraints
- Case Length Determinations/Mann Barrel Interface
- Body Sleeve
- Baseline Body Design Analysis
- Fuze



Objectives

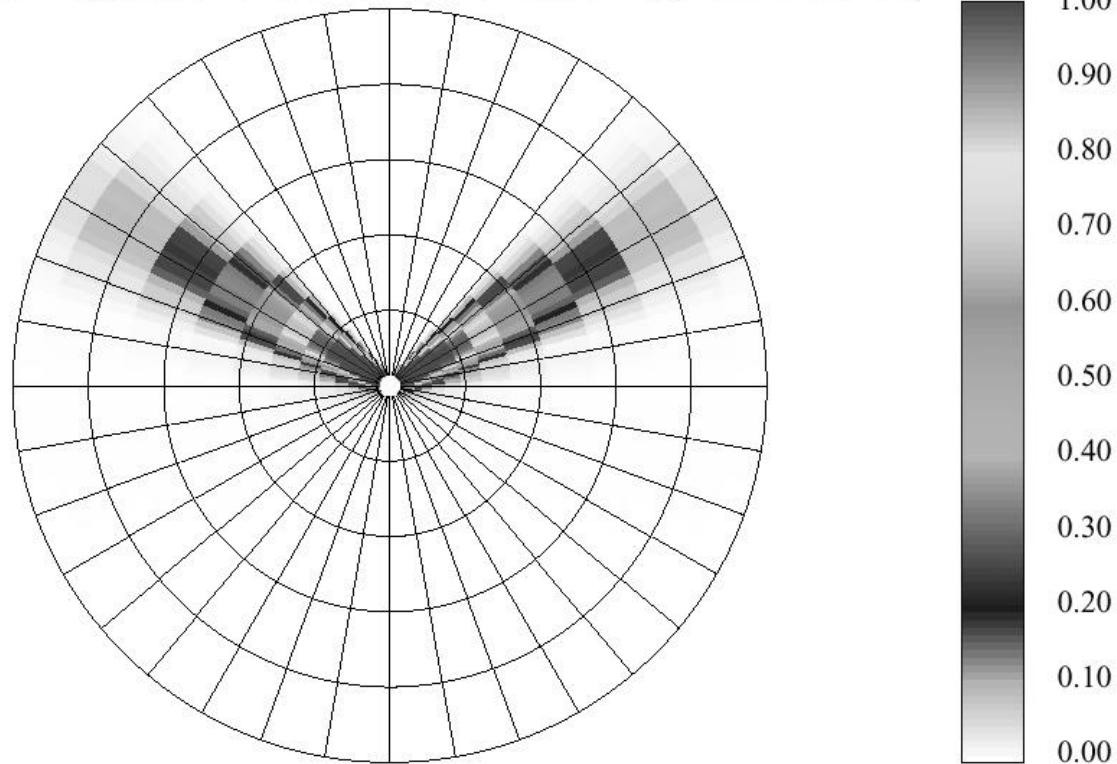
- Develop a cartridge that will burst at a pre-determined location
- Show an increase in lethal area of 400% when compared to a 30 x 173 HEI projectile with a PD fuze



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PROBABILITY OF INCAPACITATION GIVEN A BURST

Warhead: Generic 30mm
Range: 1000 m - Burst Height: 0.00 ft
Prone Target - Incapacitation Criterion: 30 Second Assault - Body Part: Whole Body



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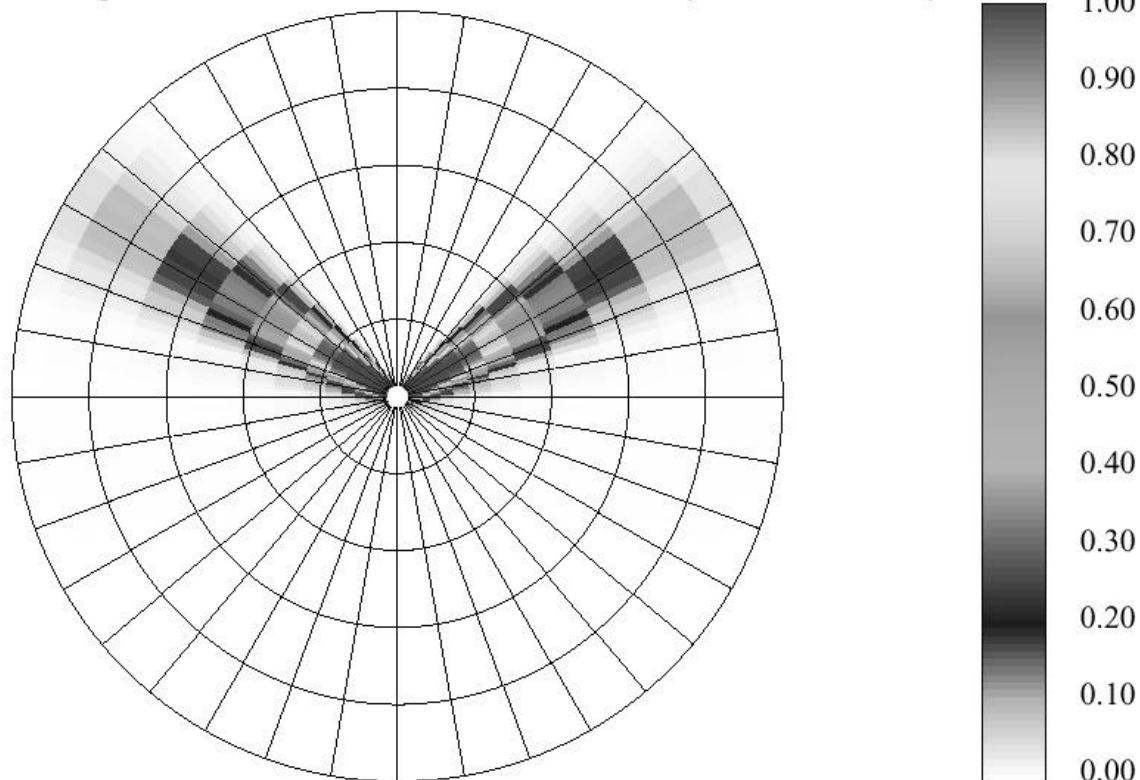


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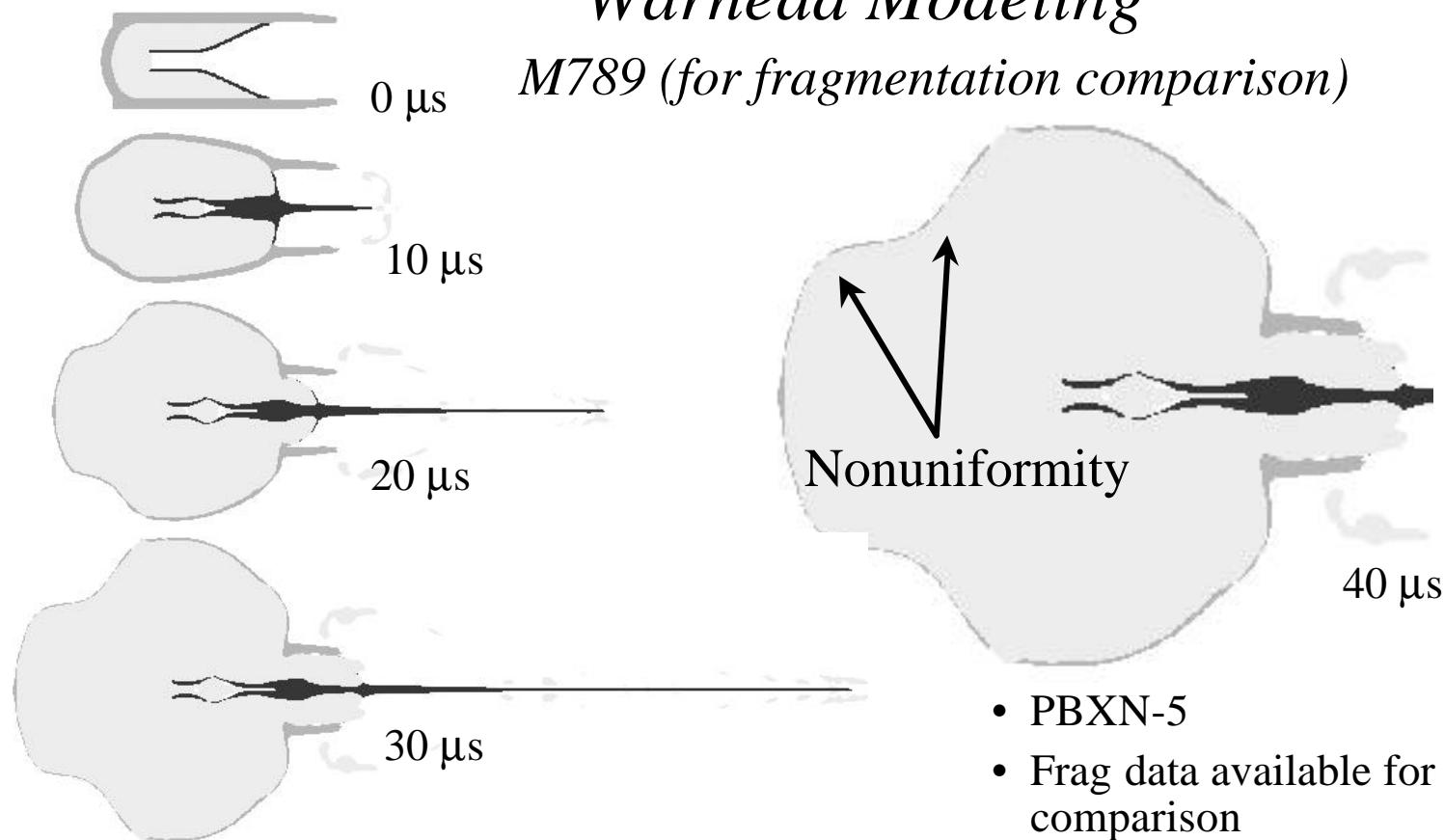
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Warhead Modeling

M789 (for fragmentation comparison)

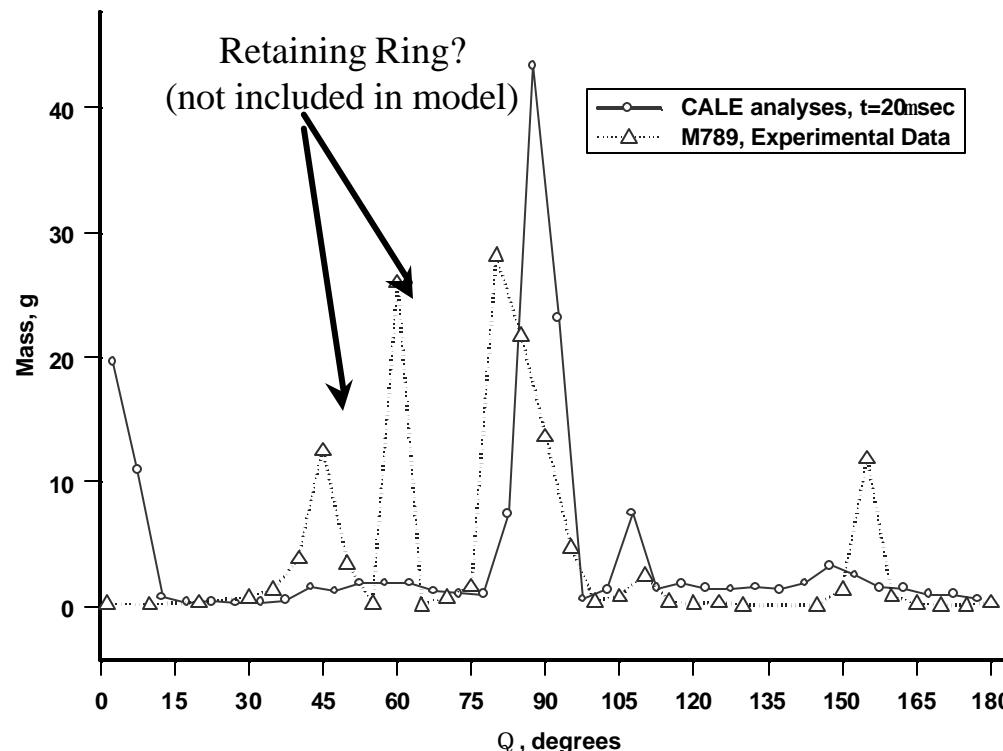


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M789 fragmentation comparison



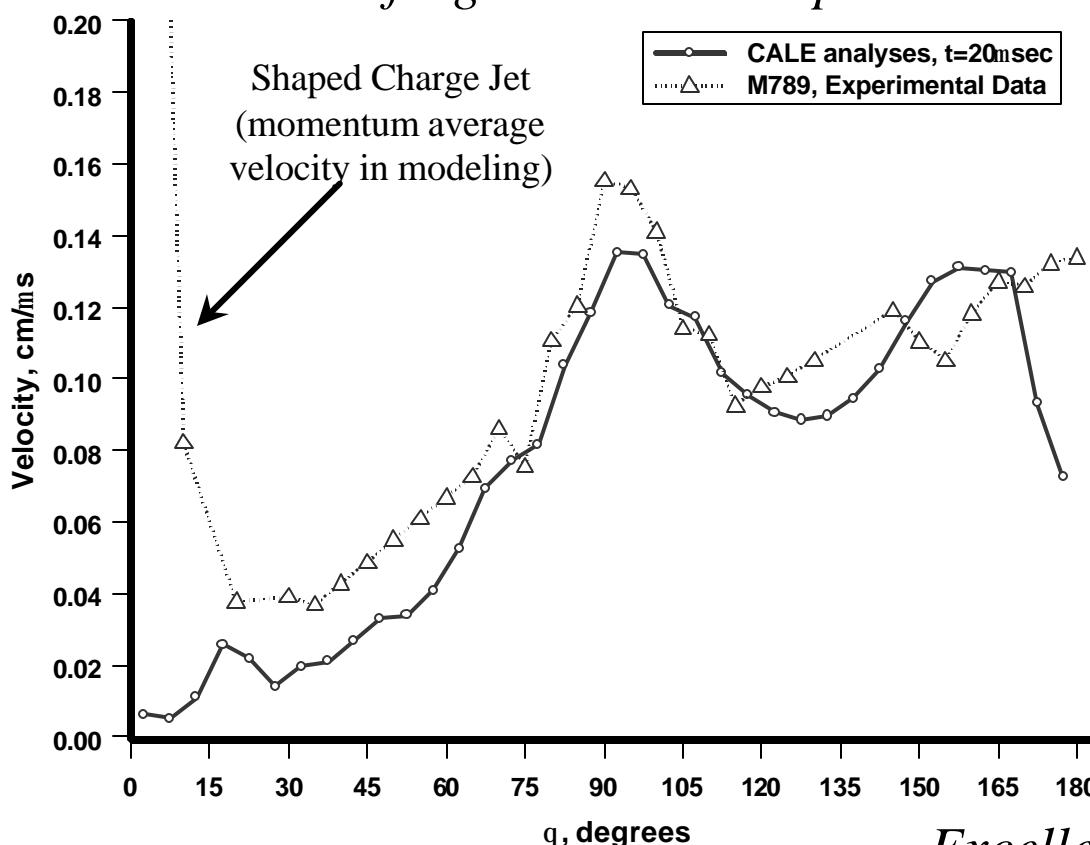
Excellent Agreement!

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M789 fragmentation comparison

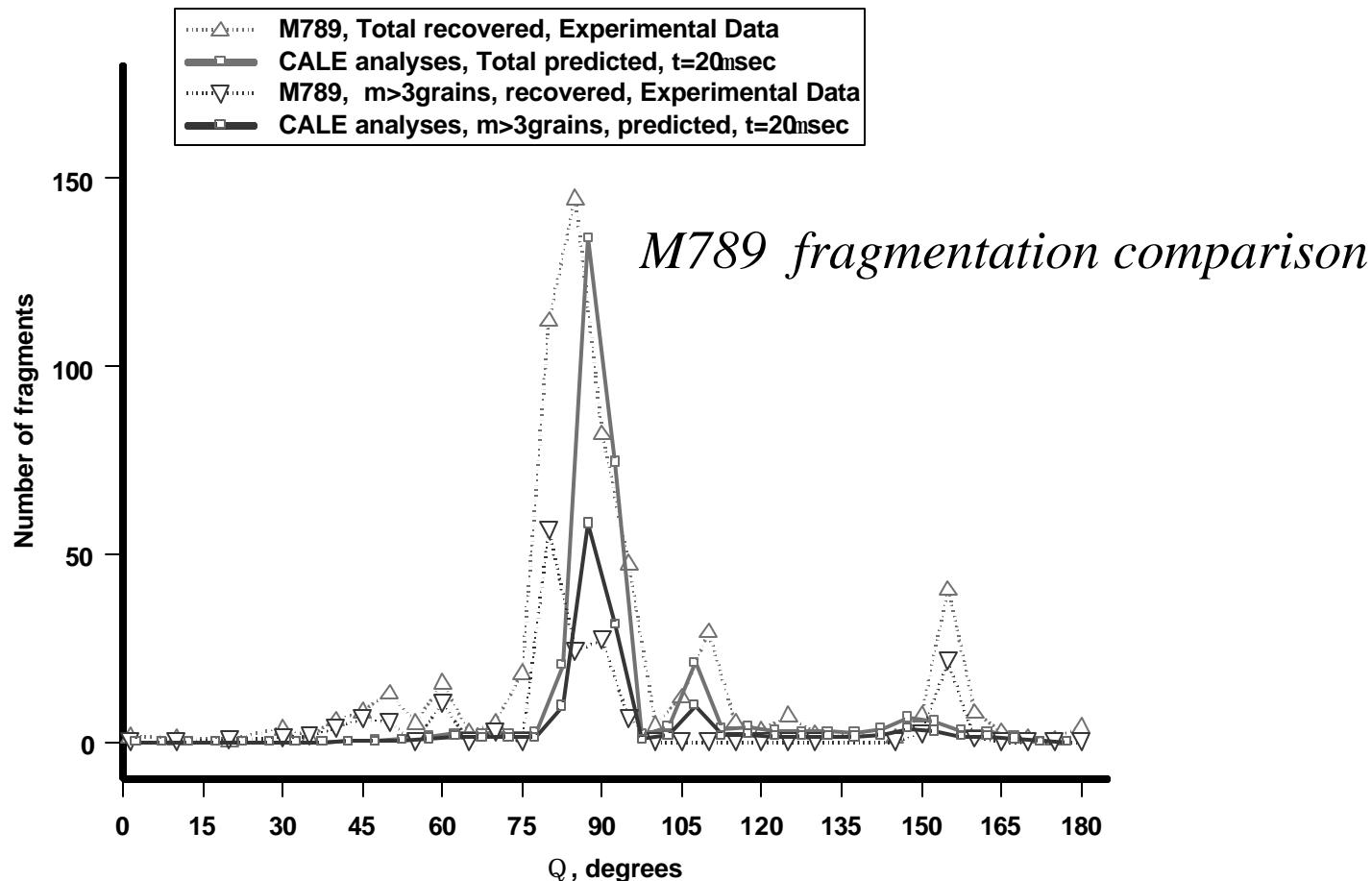


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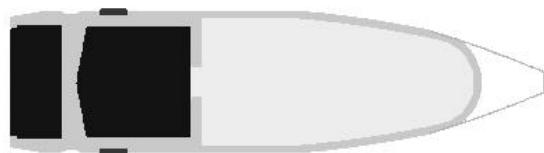
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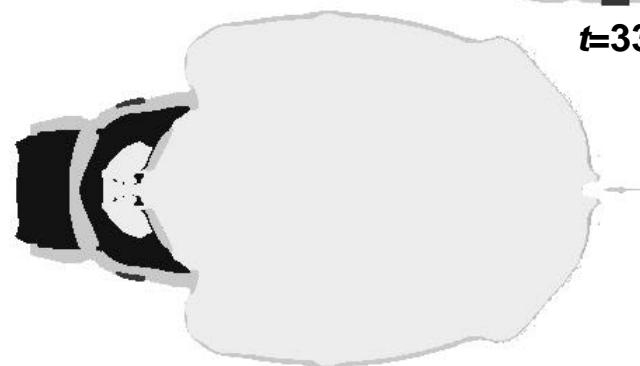
$t=11.2\% \text{ (} 0.0885 \text{ in)}$



$t=22.5\% \text{ (} 0.1770 \text{ in)}$



$t=33.7\% \text{ (} 0.2655 \text{ in)}$

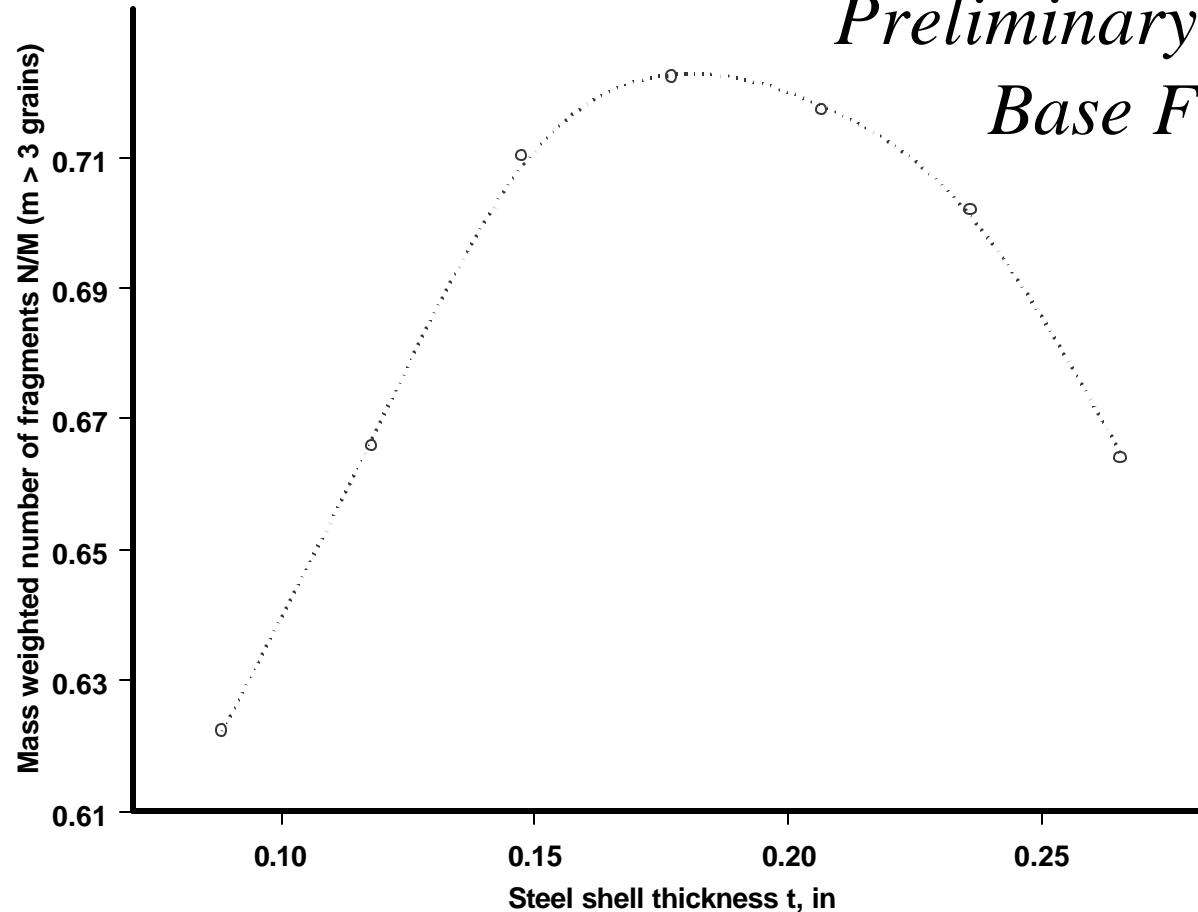


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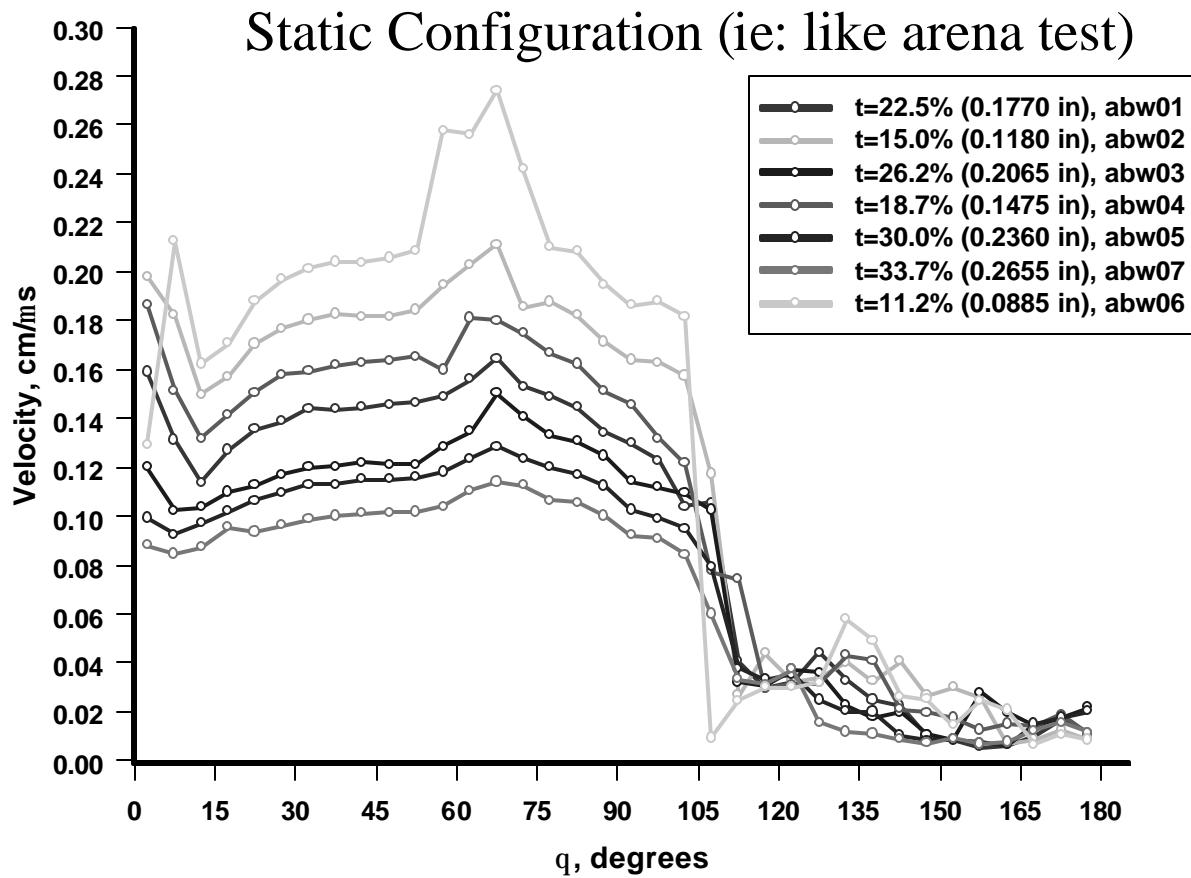
*Preliminary Baseline
Base Fuzed*



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*ALACV A/B Warhead
Downselected Baselines*

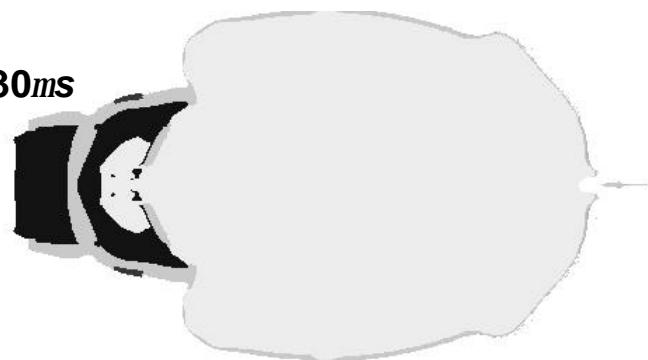
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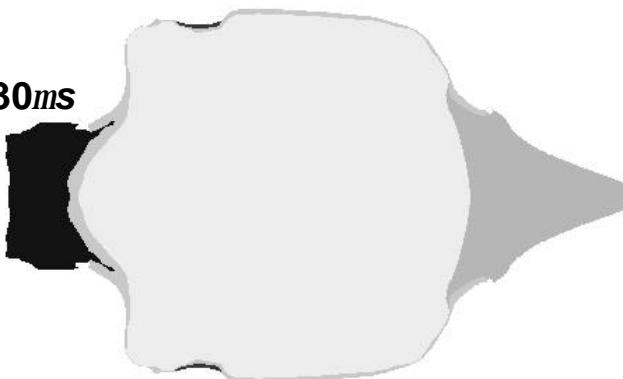
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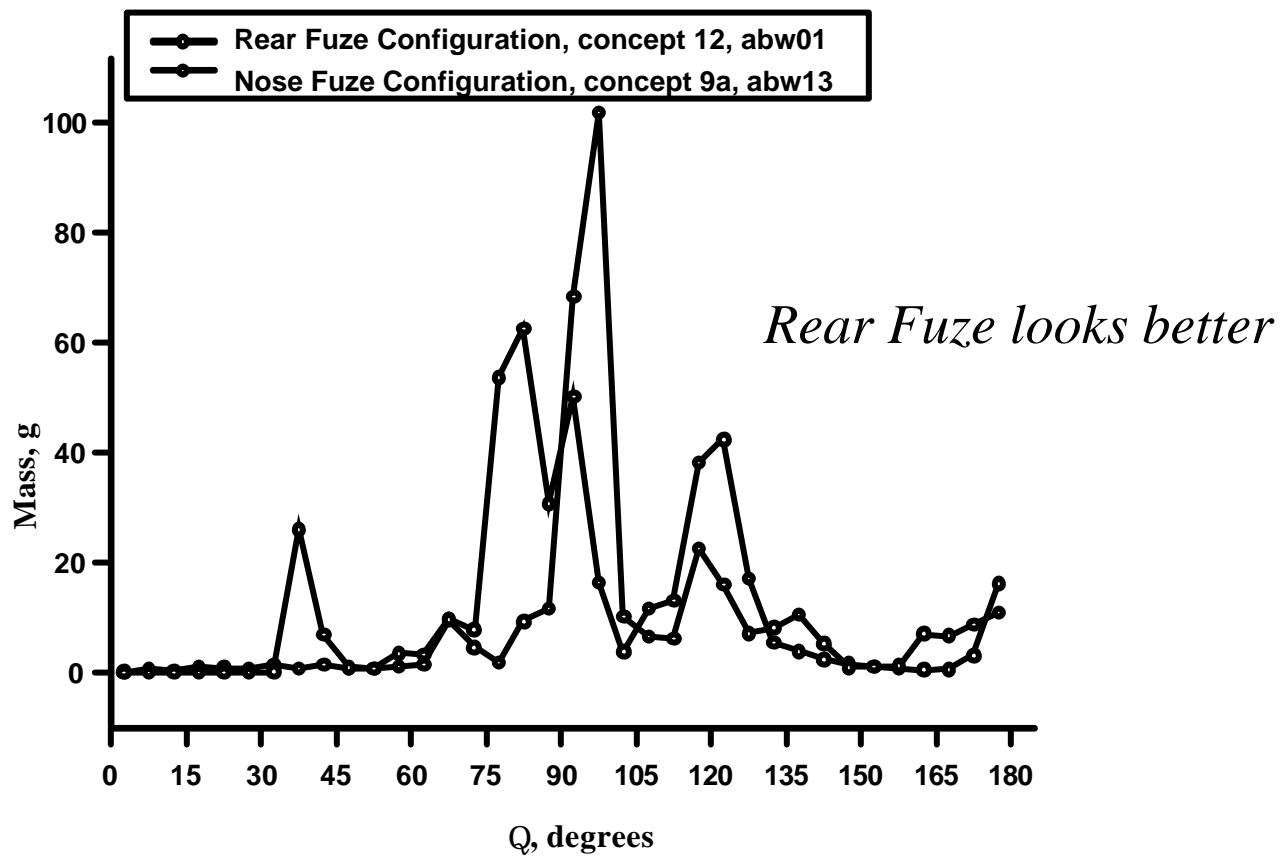


**Rear Fuze Configuration
(concept 12, abw01)**

**Nose Fuse Configuration
(concept 9a, abw13)**



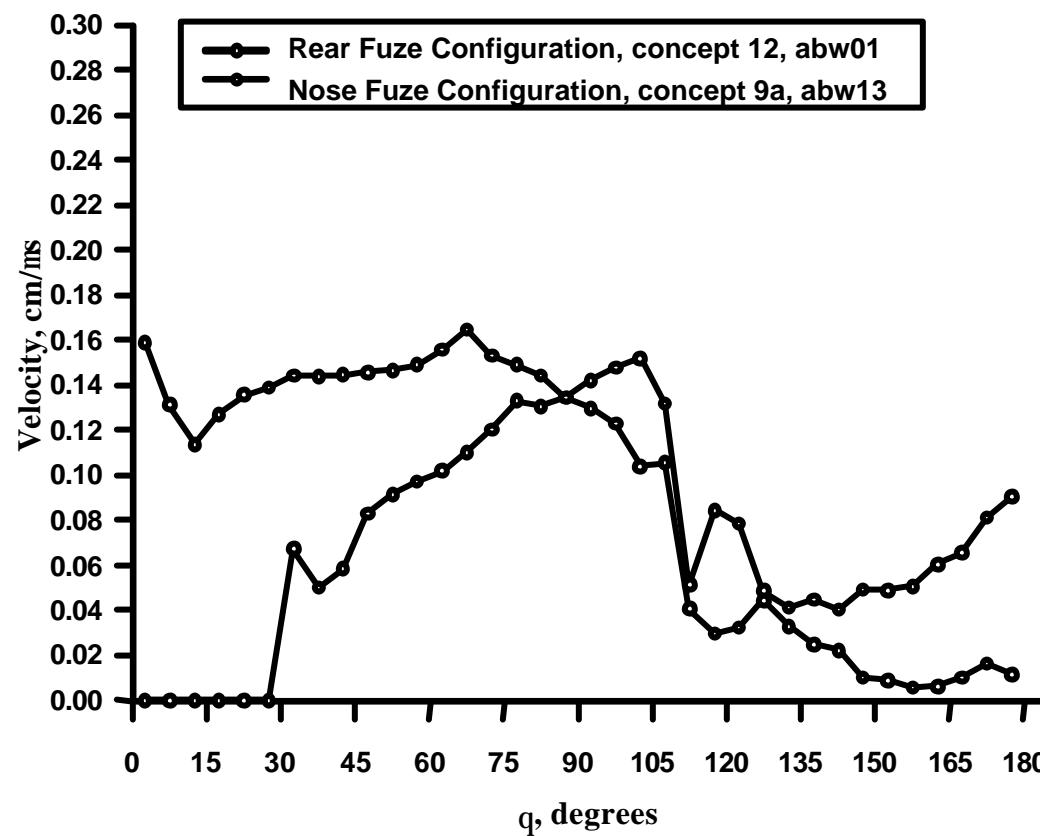
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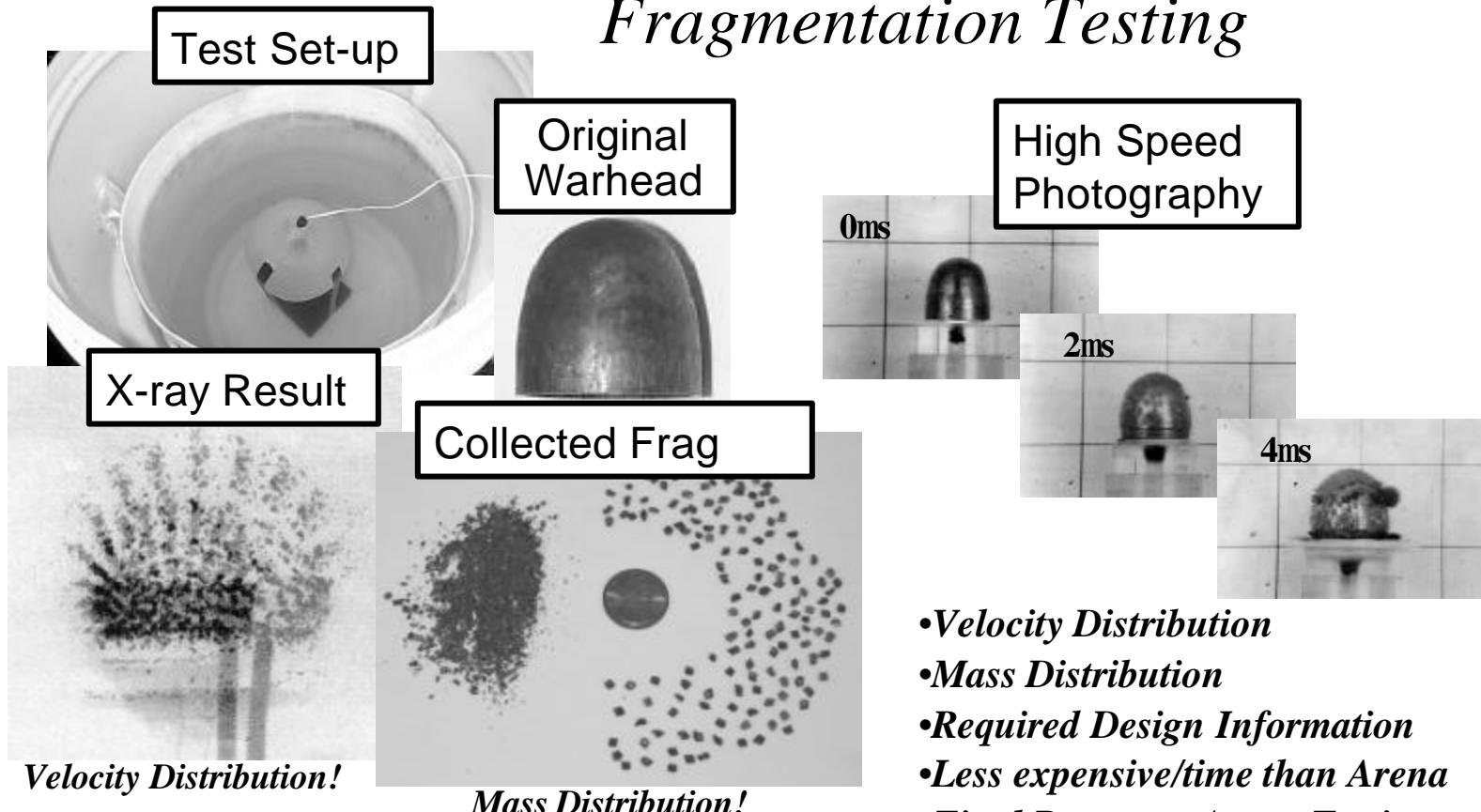
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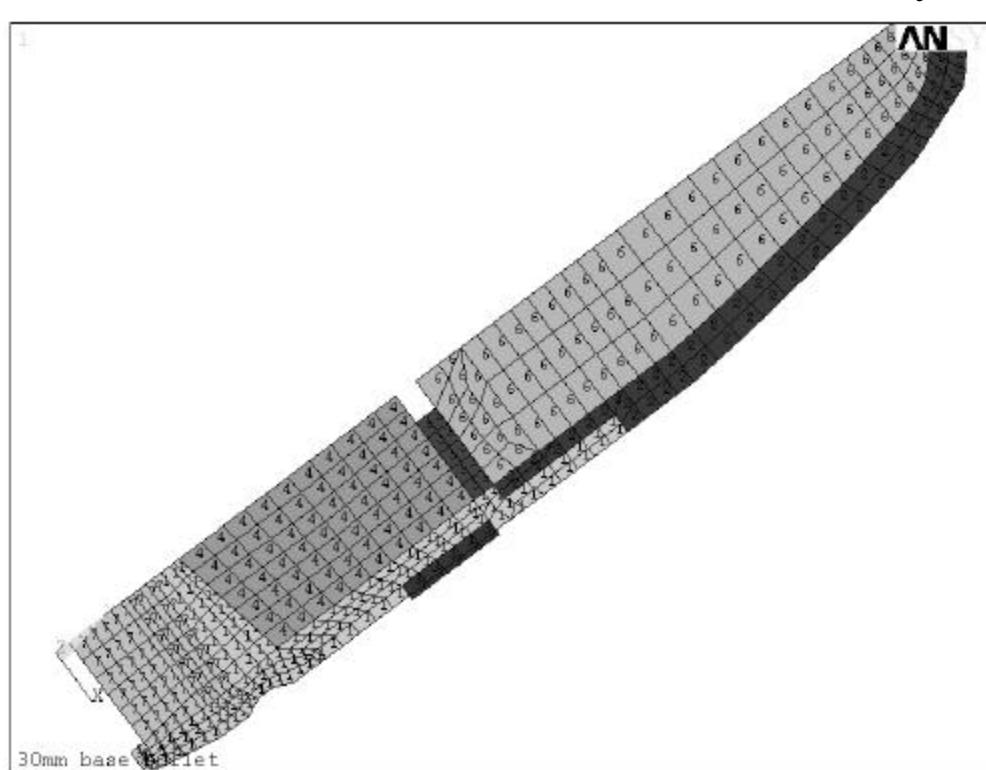


- **Velocity Distribution**
- **Mass Distribution**
- **Required Design Information**
- **Less expensive/time than Arena**
- **Final Prototype Arena Testing**



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*Base Initiated Steel Baseline
Finite Element G-load analysis*



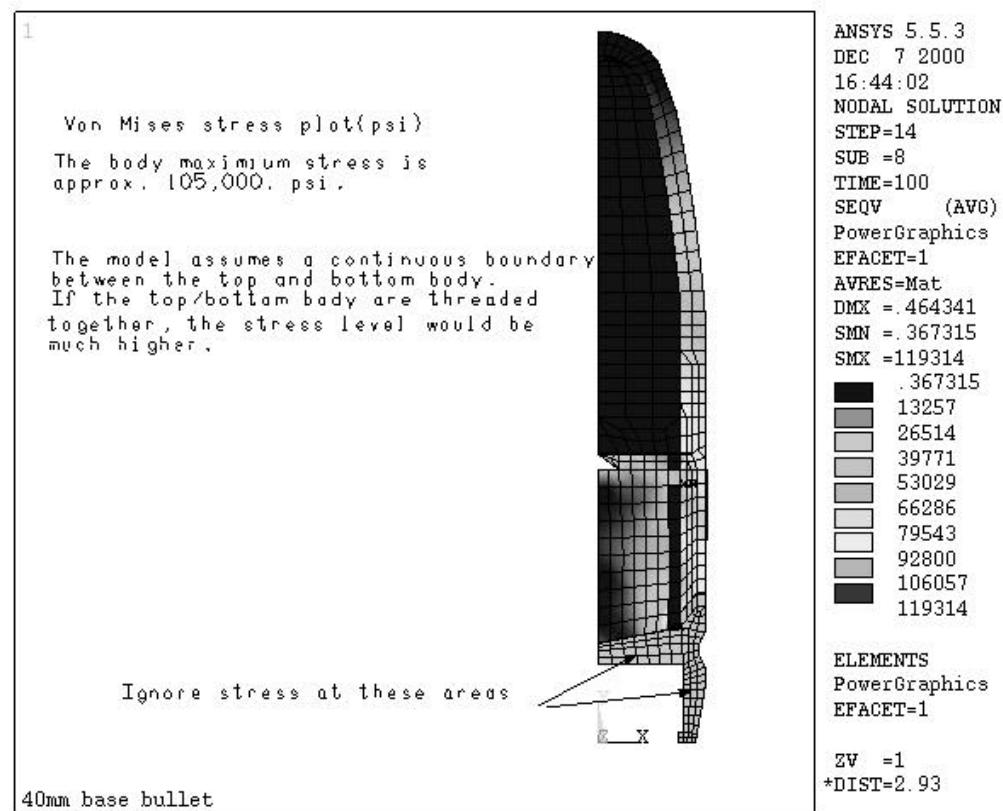
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Warhead Survives Full Load

Finite Element G-load analysis



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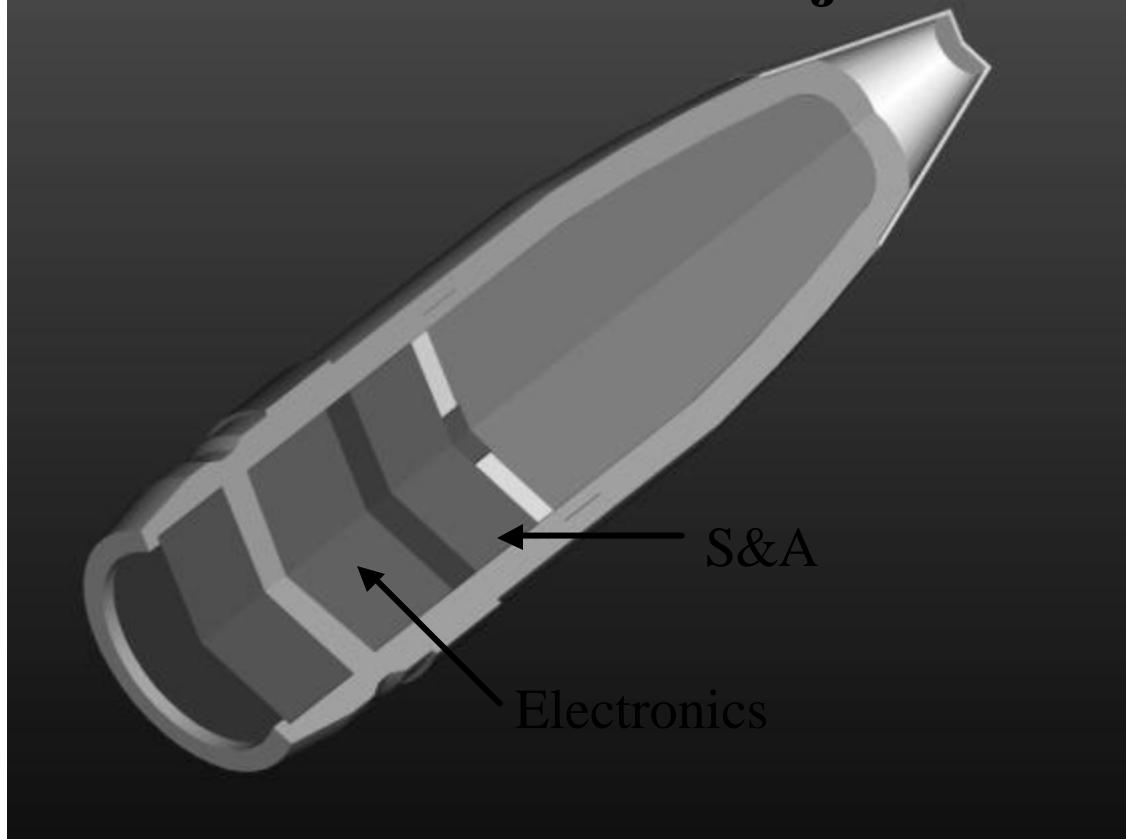
ALACV FUZE

- In-house Design of a Modular Timed Fuze
 - Maximum Use of Off-The-Shelf Components
 - Pre-set Time Input
 - Single Shot Test Firing Only
- CRADA with Industry
 - Define Interfaces between Electronics/S&A
 - Partner to Demo Advanced Designs & Multiple Mission Modes



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ALACV Baseline Projectile



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